

*Date: January 21, 2004*

*Declaration*

*I, Michihiko Matsuba, President of Fukuyama Sangyo Honyaku Center, Ltd., of 16-3, 2-chome, Nogami-cho, Fukuyama, Japan, do solemnly and sincerely declare that I understand well both the Japanese and English languages and that the attached document in English is a full and faithful translation, of the copy of Japanese Patent Publication No. 3062957 published on May 12, 2000.*

A handwritten signature in black ink, appearing to read 'm. matsuba', with a stylized flourish at the end.

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MOUNT LOCK DEVICE FOR CAMERA

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Inventor: Masae KATAYAMA

Applicant: Sigma Corporation

SPECIFICATION

[TITLE OF THE INVENTION] Mount Lock Device for Camera

[WHAT IS CLAIMED IS;]

[Claim 1] A mount lock device for a camera in which a circular lock groove is formed in either mount of a camera mount or a lens mount being relatively rotatable to each other at a fixed angle, and a cylindrical lock member capable of being engaged with and being disengaged from the lock groove is provided on the other mount, the mounts being fixed by the lock groove and the lock member, wherein the circular lock groove is beveled such that the diameter of the deepest part of the lock groove is smaller than the diameter of the lock member.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[Field of the Invention] The present invention relates to a mount lock device as an attaching/detaching part of a single lens reflex camera. More particularly, the present invention relates to a lock device eliminating looseness of the mount lock.

[0002]

[Prior Art] Japanese Utility Model Publication No. Sho-53-50420 discloses a lens lock device as an attaching/detaching device of an interchangeable lens to a camera main body, wherein a positioning member energized with the aid of a spring projects to be engaged with a positioning recessed part when a positioning engaging part is at a prescribed position, while the engagement between the positioning member and the positioning recessed part is released according to engagement release operation by a lock release member. Also, Japanese Unexamined Patent Publication No. Sho-61-32042 discloses a lens lock device, wherein a non-contact part having a small slope at the end side and a large slope at the engaging part side is formed between the end of the side surface of both or any one of a positioning member and a positioning recessed part and the engaging part. Accordingly, the engagement between a camera main body and an interchangeable lens is ensured.

[0003]

[Problems to be Solved by the Invention] Looseness is, to some extent, generated in a mount part of a single lens reflex camera. While looseness generated in the mount part is attributable to a clearance necessary for mounting, generation of looseness is preferably small in a precision instrument such as a single lens reflex camera. As for the kinds of looseness in the mount part, there are looseness in the diameter direction of the mount part, looseness in the cross direction and looseness in the rotating direction. Looseness generated in the diameter direction is attributable to a gap of an in-low part of the mount part. Looseness generated in the cross direction is attributable to a gap between a bayonet pawl and a bayonet groove. Looseness generated in the rotating direction is attributable to a gap between a lock groove and a lock pin. The mounting of a heavy lens such as a large diameter lens and a super-telephoto lens causes looseness to generate in the vertical direction of the mount part, while the rotating operation such as focusing and zooming causes looseness to generate in the diameter direction.

[0004] In a mount lock device for a camera in which a lock groove is formed in either mount of a camera mount or a lens mount being relatively rotatable to each other at a fixed angle, and

a lock member capable of being engaged with and being disengaged from the lock groove is provided on the other mount, the mounts being fixed by the lock groove and the lock member, as shown in Fig. 5, a problem exists in that looseness is generated in the rotating direction due to a clearance  $\Delta$  between a lock groove 43 formed in a mount surface 42 of a lens mount 41 and a lock pin 53 projecting from a mount surface 52 of a camera mount 51.

[0005]

[Means for Solving the Problems] The present invention solves the problem in that in the mount lock device for the camera in which the lock groove is formed in either mount of the camera mount or the lens mount being relatively rotatable to each other at a fixed angle, and the lock member capable of being engaged with and being disengaged from the lock groove is provided on the other mount, the mounts being fixed by the lock groove and the lock member, looseness is generated in the rotating direction by beveling the inner diameter surface of the lock groove.

[0006]

[Action] The end of the lock member is fixed on the inclination of the inner diameter surface of the lock groove by beveling the inner diameter surface of the lock groove and thereby

looseness in the rotating direction between the camera mount and the lens mount is eliminated.

[0007]

[Example] The example of the present invention will be described below.

[0008] Fig. 2 is a front view illustrating a lens mount of a lock device according to the present invention. Fig. 3 is a front view illustrating a camera mount of a lock device according to the present invention.

[0009] In Fig. 2, numeral 11 designates a lens mount and three bayonet pawls 14a, 14b, 14c are formed on the inner peripheral side of a mount surface 12. A lock groove 13 is formed in the left peripheral area of the mount surface 12.

[0010] In Fig. 3, numeral 21 designates a camera mount and three bayonet pawls 24a, 24b, 24c which are respectively engaged with the bayonet pawls 14a, 14b, 14c of the lens mount 11 are formed on the inner peripheral surface of a mount surface 22. A lock pin 23 is provided on the right peripheral area of the mount surface 22. As shown in Fig. 4, the lock pin 23 is energized to project in the optical axis direction from the mount surface 12 of the lens mount 11 with the aid of a spring 32 and thereby the lock pin 23 is engaged with the lock groove 13 of the lens mount 11.

[0011] Fig. 4 is a cross sectional view illustrating the lock state between a lens mount and a camera mount. When a release button 31 is pressed, the lock pin 23 is retracted to the inside of the mount surface 22 from the lock groove 13 and thereby the lock state is released.

[0012] Fig. 1 is a cross sectional view illustrating the relationship between a lock groove and a lock pin of a mount lock device for a camera according to the present invention.

[0013] Numeral 11 designates the lens mount and numeral 21 designates the camera mount. The circular lock groove 13 is formed in the lens mount 11. The lock groove 13 is provided with an inclined part 15 such that the diameter of the lock groove 13 becomes smaller in line with depth from the diameter 13a of the mount surface 12. In the camera mount 21, the cylindrical lock pin 23 of the camera mount 21 projects to be engaged with the lock groove 13 of the lens mount 11 with the aid of the spring (not shown). The lock groove 13 of the lens mount 11 is provided with the inclined part 15. The diameter 13b of the deepest part of the lock groove 13 is smaller than the diameter 23a of the lock pin 23 of the camera mount 21, eliminating a clearance between the lock groove 13 and the lock pin 23 at engagement.

[0014]

[Effects of the Invention] The end of the lock member is fixed on the inclination of the inner diameter surface of the lock groove by beveling the inner diameter surface of the lock groove and thereby looseness in the rotating direction between the camera mount and the lens mount is eliminated. Accordingly, mount looseness can be suppressed in a heavy lens such as a large diameter lens and a super-telephoto lens.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig. 1] is a cross sectional view illustrating the engagement state of a mount lock device for a camera according to the present invention.

[Fig. 2] is a front view illustrating a lens mount.

[Fig. 3] is a front view illustrating a camera mount.

[Fig. 4] is a cross sectional view illustrating the lock state between a lens mount and a camera mount.

[Fig. 5] is a cross sectional view illustrating the engagement state of a mount lock device for a conventional camera.

[Description of the Symbols]

11 lens mount

13 lock groove

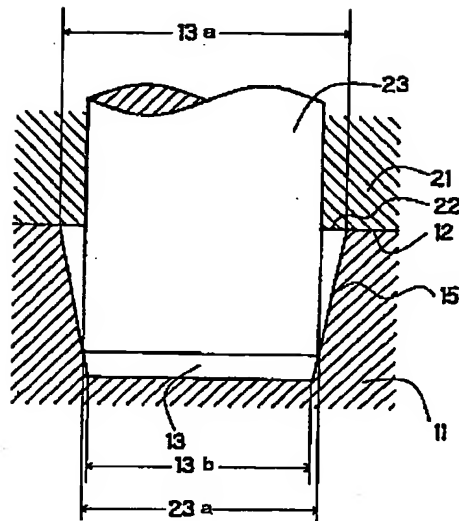
15 inclined part

21 camera mount

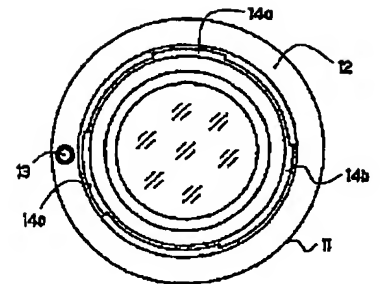
23 lock pin



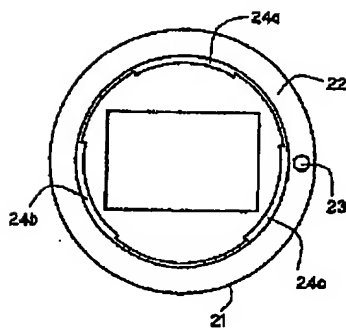
**Fig.1**



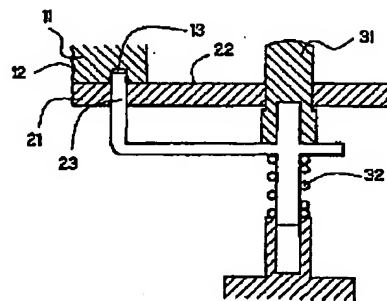
**Fig.2**



**Fig.3**



**Fig.4**



**Fig.5**

